

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A wireless communication apparatus for performing data communication under a back scattering system using reflection of incoming radio waves, said wireless communication apparatus comprising a data transmission unit comprising:

an antenna for receiving an incoming radio wave from a data transfer destination;

as many as  $n$  signal channels wherein a  $k$ -th signal channel gives a phase difference of  $(k-1)\lambda/2^{n-1}$  for one-way wave passage therethrough, where  $1 \leq k \leq n$ ; and

reflected wave forming means for forming reflected waves with as many as  $n$  different phases, by selecting any one of said signal channels in keeping with outgoing data;

wherein said data transmission unit forms said outgoing data using a phase difference pattern of said reflected waves with regard to said incoming radio wave.

Claim 2 (Original): A wireless communication apparatus according to claim 1, further comprising a first through an  $(n-1)$ th phase shifter each giving a phase difference of  $\lambda/2^{n+1}$  for one-way wave passage therethrough, the phase shifters being connected in series to said antenna;

wherein said  $n$  signal channels comprise a first signal channel for acquiring a first reflected wave by getting said incoming radio wave directly reflected without wave passage through any of said phase shifters, and a  $k$ -th signal channel for acquiring a  $k$ -th reflected wave having a phase shifted by  $(k-1)\pi/2^{n-1}$  relative to the phase of said first reflected wave through two-way wave passage between said first phase shifter and a  $(k-1)$ th phase shifter, where  $1 \leq k \leq n$ ; and

wherein said reflected wave forming means performs  $2n$  phase PSK modulation by dividing said outgoing data into increments of  $2^{n-1}$  bits each and by assigning phases to the

reflected waves through selection of a signal channel in keeping with combinations of 0's and 1's in the  $2^{n-1}$  bits.

Claim 3 (Original): A wireless communication apparatus according to claim 2, further comprising a first through an n-th reflection point located between said antenna and said first phase shifter, between said (k-t)th phase shifter and said k-th phase shifter where  $2 \leq k \leq n-1$ , and downstream of said (n-1)th phase shifter;

wherein said reflected wave forming means performs  $2n$  phase PSK modulation by dividing said outgoing data into increments of  $2^{n-1}$  bits each and by assigning phases to the reflected waves through switching of said reflection points in keeping with combinations of 0's and 1's in the  $2^{n-1}$  bits.

Claim 4 (Original): A wireless communication apparatus according to claim 3, wherein each of said reflection points is formed either by grounding or by use of an open termination.

Claim 5 (Original): A wireless communication apparatus according to claim 1, further comprising a first through a third phase shifter each giving a phase difference of  $\lambda/8$  for one-way wave passage therethrough, the phase shifters being connected in series to said antenna;

wherein said n signal channels comprise: a first signal channel for acquiring a first reflected wave by getting said incoming radio wave directly reflected without wave passage through any of said phase shifters; a second signal channel for acquiring a second reflected wave having a phase shifted by  $\pi/2$  relative to the phase of said first reflected wave through two-way wave passage through said first phase shifter alone; a third signal channel for

acquiring a third reflected wave having a phase shifted by  $\pi$  relative to the phase of said first reflected wave through two-way wave passage through said first and said second phase shifters; and a fourth signal channel for acquiring a fourth reflected wave having a phase shifted by  $3\pi/2$  relative to the phase of said first reflected wave through two-way wave passage through said first through said third phase shifters; and

wherein said reflected wave forming means performs QPSK modulation by dividing said outgoing data into increments of 2 bits each and by assigning phases to the reflected waves through selection of a signal channel in keeping with combinations of 0 and 1 in the 2 bits.

Claim 6 (Original): A wireless communication apparatus according to claim 5, wherein said reflected wave forming means performs PSK modulation using solely said first and said third signal channels.

Claim 7 (Original): A wireless communication apparatus for performing data communication under a back scattering system using reflection of incoming radio waves, said wireless communication apparatus comprising a data transmission unit comprising:

- an antenna for receiving an incoming radio wave from a data transfer destination;
- a first reflected signal channel made of a first radio frequency switch;
- a second reflected signal channel made of phase modulating means giving a phase difference of  $\lambda/8$  and a second radio frequency switch;

serial/parallel converting means for converting outgoing data from serial form into a parallel signal; and

synthesizing/distributing means for distributing said incoming radio wave coming from said antenna to the reflected signal channels and for synthesizing outputs from said reflected signal channels;

wherein activation and deactivation of each of said radio frequency switches are controlled using two data items constituting the data having undergone the serial/parallel conversion, so that said data transmission unit forms said outgoing data using a phase difference pattern of the reflected waves with regard to said incoming radio wave.

Claim 8 (Currently Amended): A wireless communication apparatus according to ~~any one of claims 1 through 7~~ claim 1, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 9 (New): A wireless communication apparatus according to claim 2, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 10 (New): A wireless communication apparatus according to claim 3, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave

received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 11 (New): A wireless communication apparatus according to claim 4, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 12 (New): A wireless communication apparatus according to claim 5, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 13 (New): A wireless communication apparatus according to claim 6, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.

Claim 14 (New): A wireless communication apparatus according to claim 7, further comprising a data reception unit constituted by a filter for allowing said incoming radio wave received by said antenna to pass on a predetermined frequency band, and by a data reception unit comprising a wave detection unit for forming a signal;

wherein said data transmission unit and said data reception unit are switched alternately depending on whether or not said outgoing data is transmitted.